REPÚBLICA DE MOÇAMBIQUE
Ministério da saúde

FUNDAÇÃO ARIEL GLASER CONTRA O SIDA PEDIÁTRICO

IMPROVEMENT OF HIV/TB CARE: TIME SERIES ANALYSIS OF HEALTH FACILITY DATA

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Background: Tuberculosis (TB) is the most common opportunistic infection in Human Immunodeficiency Virus 1 (HIV-1) infected individuals. TB/HIV co-infection makes diagnosis, treatment and presentation of TB a challenge resulting in high mortality from TB in HIV-infected populations. In 2012, the Ministry of Health of Mozambique strategically adopted a one-stop model of care, aiming to increase TB screening and treatment for HIV-infected patients. Here we evaluate the effect of this strategy on access and retention to TB and HIV services at health facility (HF) level in Maputo province.

Methods: HF offering HIV and TB care services from January 2010 to January 2016 and were included. Indicators per HF were computed from an electronic patient track system *(ePTS)*. Interrupted time series (ITS) analysis of HF level indicators was conducted. Time segments included before July 2012 (PRE-intervention: segment 1), after June 2013 (POST-intervention: Segment 3) and the 12 months between PRE and POST (segment 2) and generalized estimating equation (GEE) linear and logistic regressions with robust standard errors were used to estimate per indicator the change on the level and the slope from PRE to POST.

Results: In total 24 HF were included in the analysis (3 Urban and 21 Rural). The odds of TB screening increased significantly from end of segment 1 to beginning of segment 3 (OR: 4.10; 95%CI 2.41 - 6.99; p<0.001) and from a monthly odds-ratio of 1.06 to 1.12 respectively. Furthermore, GEE showed an increase in proportion of patients screened for TB within 12 months of registration of approximately 100% at end of segment 3 compared to less than 60% at end of segment 1 (Figure 1). The mean time to ART initiation decreased from 180 days at the end of segment 1 to 108 days at beginning of period 3 (relative decrease: 40%; 95%CI 32-47%) and from monthly mean decrease of 2% to 5%. By July 2015, the mean time to ART initiation was less than 1 month (Figure 2) . The odds to access to cotrimoxazole prophylaxis within 3 months of registration increased from end of segment 1 to end of segment 3 (OR: 2.21; 95% CI 1.75 – 2.81**)** (Figure 3). Overall, no significant changes were observed in retention at 12 months for general population enrolled, however it has improved from 77% to 88% from end of segment 1 to beginning of segment 2 among adolescents (Figure 4). Additionally, the odds of ART initiation within 90 days for patients on WHO stage 1 and 2 increased at the beginning of segment 3 [Jumps: OR: 1.80, 95%CI: 1.50-2.16; p<0.001 (Table 1). Similar trend was observed in for patients on WHO stage 3 and 4 [Jumps: OR: 1.81; 95%CI: 1.47-2.21; p<0.001)

Conclusions: Our results suggest a beneficial effect of the one-stop model for TB/HIV co-infected patients. This strategy not only improved the identification of TB infected patients, but also increased access to cotrimoxazole prophylaxis and reduced the time to ART initiation to less than 30 days. Altogether these may significantly contribute to reduction in mortality and morbidity associated to TB/HIV co-infection.
We did not find a temporal improvement in retention on ART associated with one-stop model. This may suggest the need for other interventions and research to improve adherence and retention to treatment.

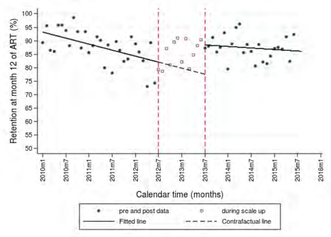


Figure 4. Proportion of male and female adolescents (%) retained post 12 months of ART. Lines fitted form GEE regression.

Table 1: Change in proportion of patients on WHO 1 and 2 stage initiating ART within 90 days of registration

	Odds scale			Proportion scale*		
Regression term	**OR**	**95%CI**	**p-value**	**PD (%)**	**95%CI**	**p-value**
Slopes (per 1 month increase)						
Period 1	1.02	1.01 - 1.03	0.006	0.41	0.14 - 0.68	0.003
Period 3	1.02	1.01 - 1.03	< 0.001	0.48	0.26 - 0.70	< 0.001
Jumps						
From end of period 1 to start of period 3	1.80	1.50 - 2.16	< 0.001	14.58	10.16 - 19.00	< 0.001
At start of period 3 (compared to the counterfactual)	1.46	1.07 - 1.98	0.016	9.38	1.77 - 16.98	0.016
Intercept	0.44	0.28 - 0.68	< 0.001	30.47	21.28 - 39.67	< 0.001

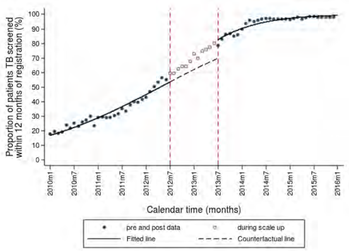


Figure1. Estimation of proportion (in %) of patients screened for TB within 12 months of registrations. Lines fitted form GEE regression.

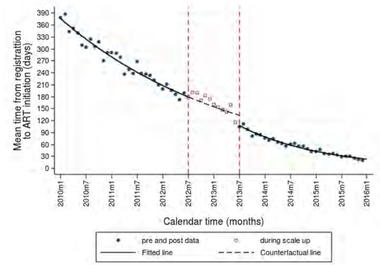


Figure 2. Estimation of mean time to ART inition (in days). Lines fitted form GEE regression.

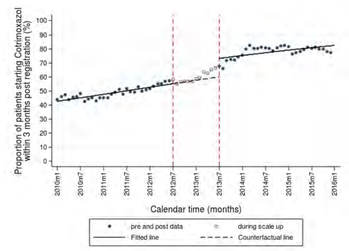


Figure 3. Proportion of patients who started cotrimoxazol prophylaxis within 3 months after registration to HIV care services. Lines fitted form GEE regression.

Table 2: Change on proportion of patients on WHO 3 and 4 initiating ART within 90 days of registration

	Odds scale			Proportion scale*		
Regression term	OR	95%CI	p-value	PD (%)	95%CI	p-value
Slopes (per 1 month increase)						
Period 1	1.02	1.01 - 1.04	0.001	0.60	0.21 - 0.98	0.002
Period 3	1.04	1.02 - 1.05	< 0.001	0.43	0.29 - 0.57	< 0.001
Jumps						
From end of period 1 to start of period 3	1.81	1.47 - 2.21	< 0.001	11.44	7.04 - 15.84	< 0.001
At start of period 3 (compared to the counterfactual)	1.34	0.97 - 1.86	0.073	5.32	-0.96 - 11.60	0.097
Intercept	0.99	0.66 - 1.51	0.978	49.85	39.48 - 60.23	< 0.001

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